What is claimed is:

1. An inkjet recording head for ejecting ink in ink channels by deformation of the piezoelectric element, comprising:

a partition wall, at least a part of which is formed with a piezoelectric element, for partitioning a plurality of tubular ink channels;

a top wall for forming a top surface of the plurality of tubular ink channels by shielding an upper part of the plurality of tubular ink channels;

a bottom wall for forming a bottom surface of the plurality of tubular ink channels by shielding the bottom part of the plurality of tubular ink channels;

wherein, at least a part of the top wall and the bottom wall is made of AlN-BN.

2. The inkjet recording head of claim 1, wherein the part of the top wall and the bottom wall made of AlN-BN is thermally connected to a heat sink.

3. The inkjet recording head of claim 2, wherein the part of the top wall and the bottom wall made of AlN-BN is adhered

to the heat sink via an epoxy type adhesive agent including Ag particles.

4. The inkjet recording head of claim 3, wherein a layer thickness of the epoxy type adhesive agent is 50 to 70μm.

5. The inkjet recording head of claim 2, wherein a thickness of the heat sink is 1.0 to 10.0mm.

6. The inkjet recording head of claim 1, wherein the part of the top wall and the bottom wall made of AlN-BN is adhered to the partition wall via an epoxy type adhesive agent including particles of one of aluminum-nitride, alumina and silica.

7. The inkjet recording head of claim 6, wherein a layer thickness of the epoxy type adhesive agent including particles of one of aluminum-nitride, alumina and silica. is 5 to 10μm.

8. The inkjet recording head of claim 2, wherein the heat sink is provided on a carriage, on which the inkjet recording head is installed.

9. The inkjet recording head of claim 2, wherein the heat sink is thermally connected to a carriage, on which the inkjet recording head is installed.

10. An inkjet recording head for ejecting ink in ink channels by deformation of the piezoelectric element, comprising:

a partition wall for partitioning the plurality of tubular ink channels;

a top wall for forming a top surface of a plurality of tubular ink channels by shielding an upper part of the plurality of tubular ink channels;

a bottom wall for forming a bottom surface of the plurality of tubular ink channels by shielding the bottom part of the plurality of tubular ink channels;

wherein, at least a part of the top wall and the bottom wall is formed of a piezoelectric element; and at least a part of the top wall and/or the bottom wall is made of AlN-BN.

11. The inkjet recording head of claim 10, wherein the part of the top wall and the bottom wall made of AlN-BN is thermally connected to a heat sink.

12. The inkjet recording head of claim 11, wherein the part of the top wall and the bottom wall made of AlN-BN is adhered to the heat sink via an epoxy type adhesive agent including Ag particles.

13. The inkjet recording head of claim 12, wherein a layer thickness of the epoxy type adhesive agent is 50 to 70μm.

14. The inkjet recording head of claim 10, wherein a thickness of the heat sink is 1.0 to 10.0mm.

15. The inkjet recording head of claim 10, wherein the partition wall is formed of AlN-BN, and the partition wall is adhered to the part of the top wall and the bottom wall formed of a piezoelectric element, via an epoxy type adhesive agent including particles of one of aluminum-nitride, alumina and silica.

16. The inkjet recording head of claim 15, wherein a layer thickness of the epoxy type adhesive agent including particles of one of aluminum-nitride, alumina and silica. is 5 to 10μm.

17. The inkjet recording head of claim 11, wherein the heat sink is provided on a carriage, on which the inkjet recording head is installed.

18. The inkjet recording head of claim 11, wherein the heat sink is thermally connected to a carriage, on which the inkjet recording head is installed.

19. An inkjet recording head for ejecting ink in ink channels by deformation of the piezoelectric element, comprising:

a partition wall, formed by making grooves in an actuator substrate made of a polarized piezoelectric element, for forming longitudinal side surface of a plurality of ink channels;

a cover plate adhered on an upper surface of the partition wall to form a top surface of the plurality of ink channels;

a nozzle plate, adhered on a front side surface of the actuator substrate, having a nozzle hole for ejecting ink,

wherein the cover plate is made of a machinable ceramics, which has a higher thermal conductivity than that of the piezoelectric element, and where Lc and Lp respectively represent the linear thermal expansion coefficient of the cover plate and the piezoelectric element, the relationship of,

$|Lc - Lp| \leq 5 \times 10^{-6}/°C$ is satisfied, and

a top plate having higher thermal conductivity than the cover plate is provided on the cover plate.

20. The inkjet recording head of claim 19, wherein the Young's modulus of the cover plate is 50 - 200 G Pa.

21. The inkjet recording head of claim 19, wherein the flexural strength of the cover plate is not less than 100 Mpa.

22. The inkjet recording head of claim 19, wherein the Vickers hardness is not greater than 5.0 G Pa.

23. The inkjet recording head of claim 19, wherein the dielectric constant (ε) of the cover plate is not greater than 100.

24. The inkjet recording head of claim 19, wherein the top plate is a support member for mounting the recording head onto a carriage.

25. The inkjet recording head of claim 24, wherein the thickness of the top plate is 1.0 to 10.0 mm.

26. The inkjet recording head of claim 19, wherein the adhesive agent used for adhering the cover plate and the top plate comprises epoxy type adhesive agent added with Ag particles.

27. The inkjet recording head of claim 19, wherein the adhesive agent used for adhering the cover plate and the upper surface of the partition wall comprises epoxy type adhesive agent added with one of aluminum nitride, alumina, or silica.

28. The inkjet recording head of claim 19, wherein the thickness of the adhesive layer between the top plate and the cover plate is 50 - 70 μm, and the thickness of the adhesive layer between the upper surface of the partition wall and the cover plate is 5 - 10 μm.